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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/810,462
Filing Date: March 26, 2004
Appellant(s): MOORTI ET AL.

Ognyan Beremski
For Appellant

EXAMINER'S ANSWER

This is in response to the Appeal Brief filed 6/18/2007 appealing from the final Office action dated December 18, 2006.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,648,992	Wright et al.	7-1997
5,787,122	Suzuki	7-1998
6,922,549	Lyons et al.	7-2005

5,481,571	Balachandran et al.	1-1996
6,002,672	Todd	12-1999

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:
A person shall be entitled to a patent unless –

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 9, 11, 19, 21, 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Wright et al. (US 5,648,992).

For claim 1, Wright et al. [hereafter as Wright] teaches a method for controlling an antenna system [steps in Fig. 4/Fig. 3, for controlling antennas 10, 12 & column 3, lines 14-44],

the method comprising dwelling on at least one of a plurality of antennas [the switch 14 couples either antenna 10 or antenna 12 to dwell, based on the diversity control indicator 29 in column 4, lines 19-33; the 625 microsecond data burst for dwelling onto the antenna in column 1, lines 22-35; in below using col. as column];

determining a gain for said dwelled-on at least one of a plurality of antennas [processor determines, selects, the gain in path 15, 19, 17 for the received signal from the dwelling on antenna, col. 4, lines 60-64 & step 110 in Fig. 4];

determining at least one of a plurality of signal quality metrics for said dwelled-on at least one of a plurality of antennas [the diversity control signal 29, generated from diversity procedure 108 in Fig. 4, selects the antenna via switch 14 based on quality metrics, Rssi, BER, frequency variance, Fvar, Timing variance Tvar, in col. 4, line 65 to col. 5, line 21]; and

selecting for signal processing a portion of said dwelled-on at least one of a plurality of antennas [the processor reads the derived parameters of the received burst portion from the antenna being dwelled on according to the step 114 in Fig. 4; the derived parameters rssi, Fvar, Tvar, CRC, col. 5, lines 42-53; claim language does not have the meaning for dwelling on a portion of a plurality of antennas],

based on said determined gain [Fig. 9] and said determined at least one of a plurality of a plurality of signal quality metrics [Fig. 6] from said dwelled on at least one of a plurality of antennas [Fig. 4, the steps performed by the processor 25, the step 106 for updating signal quality indicator, the step 108 for performing antenna diversity procedure, the step 110 for performing gain control, the step 120 for set gain control switch 18, the step 114 for setting antenna selecting switch 14,

the processor 25 performs gain control according to the steps in Fig. 9 & the processor performs steps according to Fig. 6 to generate signal quality indicator SQI & quality metrics RSSI, FER, SQI, BER in col. 3, lines 1-13 & col. 5, lines 3-21, of a dwelled antenna 10 or 12].

For claim 11, Wright teaches a machine readable storage having stored thereon a computer program having at least one code section for controlling antenna system [the code section, processor software in col. 5, lines 3-10; the stored procedures, code section, in ASIC can be executed by processor 8051, 6800 or H8 in col. 9, lines 29-38],

the at least one code section being executable by a machine for causing the machine to perform the steps [the code sections for antenna diversity procedure 108 gain control procedure 110 & set antenna selection switch 114, are executed in Fig. 4; the steps in Fig. 5-9] comprising

dwelling on at least one of a plurality of antennas [the switch 14 couples either antenna 10 or antenna 12 for dwelling on, to based on diversity control indicator 29 in col. 4, lines 19-33; the 625 micro-second data burst dwelling on in col. 1, lines 22-35];

determining a gain for said dwelled-on at least one of a plurality of antennas [processor determines, selects, the gain in path 15, 19, 17 for the received signal from the dwelling on antenna, col. 4, lines 60-64 & step 110 in Fig. 4];

determining at least one of a plurality of signal quality metrics for said dwelled-on at least one of a plurality of antennas [the diversity control signal 29, generated from diversity procedure 108 in Fig. 4, selects the antenna via switch 14 based on quality metrics, Rssi, BER, frequency variance, Fvar, Timing variance Tvar, in col. 4, line 65 to col. 5, line 21]; and

selecting for signal processing a portion of said dwelled-on at least one of a plurality of antennas [the processor reads the derived parameters of the received burst portion from the selected antenna dwelled on according to the step 114 in Fig. 4; the derived parameters rssi, Fvar, Tvar, CRC, col. 5, lines 42-53]

based on said determined gain [Fig. 9] and said determined at least one of a plurality of a plurality of signal quality metrics [Fig. 6] from said dwelled on at least one of a plurality of antennas [Fig. 4, the steps performed by the processor 25, the step 106 for updating signal quality indicator, the step 108 for performing antenna diversity procedure, the step 110 for

performing gain control, the step 120 for set gain control switch 18, the step 114 for setting antenna selecting switch 14,

the processor 25 performs gain control according to the steps in Fig. 9 & the processor performs steps according to Fig. 6 to generate signal quality indicator SQI & quality metrics RSSI, FER, SQI, BER in col. 3, lines 1-13 & col. 5, lines 3-21, of a dwelled antenna 10 or 12].

For claim 21, Wright teaches a system [claims 16-20 in col. 12 to col. 14] for controlling an antenna system [the at least two antennas & antenna switching means in col. 12, lines 60-67], the system comprising

a processor [25] that dwells on at least one of a plurality of antennas [processor executes diversity & gain procedures, the steps 114 to select a better quality antenna, Fig. 4];

said processor determines a gain for said dwelled-on at least one of a plurality of antennas [processor determines the gain from generated gain control 28, gain control procedure 110 in Fig. 4, for the received signal from the dwelling on antenna, col. 4, lines 60-64];

said processor determines at least one of a plurality of signal quality metrics for said dwelled-on at least one of a plurality of antennas [the diversity control signal 29, generated from diversity procedure 108 in Fig. 4, selects the antenna via switch 14 based on quality metrics, Rssi, BER, frequency variance, Fvar, Timing variance Tvar, in col. 4, line 65 to col. 5, line 21]; and

said processor selects for signal processing a portion of said dwelled-on at least one of a plurality of antennas [the processor reads the derived parameters of the received burst

portion from the selected antenna dwelled on according to the step 114 in Fig. 4; the derived parameters Rssi, Fvar, Tvar, CRC, col. 5, lines 42-53]

based on said determined gain [Fig. 9] and said determined at least one of a plurality of a plurality of signal quality metrics [Fig. 6] from said dwelled on at least one of a plurality of antennas [Fig. 4, the steps performed by the processor 25, the step 106 for updating signal quality indicator, the step 108 for performing antenna diversity procedure, the step 110 for performing gain control, the step 120 for set gain control switch 18, the step 114 for setting antenna selecting switch 14,

the processor 25 performs gain control according to the steps in Fig. 9 & the processor performs steps according to Fig. 6 to generate signal quality indicator SQI & quality metrics RSSI, FER, SQI, BER in col. 3, lines 1-13 & col. 5, lines 3-21, of a dwelled antenna 10 or 12].

For claims 9, 19, 29, Wright teaches the wherein said at least one of a plurality of signal quality metrics may be an estimated received power, a received power [the detected power level of received signal in col. 4, lines 40-48], a bit error rate [BER in col. 5, lines 13-15].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2, 4, 6, 12, 14, 16, 22, 24, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Suzuki (US 5,787,122).

For claims 2, 12, 22, Wright teaches the procedures 108, 114, code, to select antenna, but fails to teach the selecting of a starting antenna.

Suzuki teaches the selecting a starting antenna from said at least one of a plurality of antennas [the selecting of antenna, starting antenna, based on the previously determined sequential order in col. 9, lines 13-26, Fig. 10; the control unit 78 of a receiving station is obviously having the code for selecting a antenna based on the previously determined sequential order], in order to receive a transmitted signal from receiving antenna. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Wright with Suzuki's selecting a antenna based on previously determined sequential order, in order to receive a transmitted signal.

For claims 4, 14, 24, Wright teaches the procedures 108, 114, code, to select antenna, but fails to teach the selecting of a starting antenna.

Suzuki teaches the selecting said starting antenna based on random selection [the selecting of antenna, starting antenna, based on the randomly selection M-series data in col. 9, lines 13-26, Fig. 10; the control unit 78 of a receiving station is obviously having the code for selecting a antenna based on the random selection], using the same reason in claim 2 for combining with Wright.

For claims 6, 16, 26, Wright teaches the gain controlling for selecting an antenna of the automatic gain control [the gain control 28 for the automatic gain control from processor 25, Fig. 3, the procedures 108, 114, code, to select antenna]. but fails to teach the selecting of a starting antenna.

Suzuki teaches the comprising determining a starting antenna based on the previously determined sequential order, col. 9, lines 13-26; the control unit 78 of a receiving station is

obviously having the code for selecting a antenna based on the sequential order, using the same reason in claim 2 for combining with Wright.

3. Claims 3, 13, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Suzuki, as applied to claims 2, 12, 22 above, and further in view of Lyons et al. (US 6,922,549 B2).

For claims 3, 13, 23, Wright teaches the procedures 108, 114, code, to select antenna, but fails to teach the selecting a starting antenna.

Suzuki teaches the selecting of a starting antenna based on the previously determined sequential order. Wright & Suzuki fail to teach the selecting of an antenna based on a predetermined criteria.

Lyons et al. [hereafter as Lyons] teaches the antenna selection diversity is based on the predetermined criteria [the maintaining of the packet error rate PER at 5% or 20% at 40 or 80 feet distance respectively, col. 14, lines 32-44; the code, instruction, executed by the processor in col. 16, lines 4-40], for maintain the data quality at error rate of 5%. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wright, Suzuki with Lyons' maintaining data quality at 5%, in order to improve the previously determined sequentially antenna selection by maintaining the data error rate low at 5%.

4. Claims 5, 15, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Suzuki, as applied to claims 2, 12, 22 above, and further in view of Balachandran et al. (US 5,481,571).

For claims 5, 15, 25, Wright teaches the procedures 108, 114, code, to select antenna. Wirght fails to teach the selecting an starting antenna. Suzuki teaches the selecting of a starting antenna based on the previously determined sequential order. Wright & Suzuki fail to teach the antenna selection is based on prior history said selection of said portion of dwelled-on at least one of a plurality of antennas.

Balachandran et al. teaches the antenna selection is based on prior history said selection of said portion of dwelled on at least one of a plurality of antennas [the selecting of a portion of the dwelling antenna from two antennas, is processor controlled according to the hysteresis value, prior history, col. 3, lines 10-35], for reliably selecting an antenna based on the previous hysteresis, prior history. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Wright, Suzuki with Balachandran' hysteresis value, in order to reliably selecting an starting antenna based on the previous hysteresis.

5. Claims 7, 17, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Suzuki and Lyons-'549 B2.

For claims 7, 17, 27, Wright teaches the procedures 108, 114, code, to select antenna, but fails to teach the selecting an starting antenna.

Suzuki teaches the selecting of a starting antenna to dwell based on the previously determined sequential order, in clam 2, & using the same reason to combine Suzuki with Wright.

Wright & Suzuki fail to teach the selecting an antenna dwelling order based on a predetermined criteria.

Lyons teaches the antenna selection for dwelling onto it based on a predetermined criteria [the maintaining of packet error rate PER at 5% or 20% at 40 or 80 feet distance respectively, col. 14, lines 32-44; the code, instruction, executed by the processor in col. 16, lines 4-40], to combining with Wright, Suzuki in order to improve the sequential antenna selection order, by maintaining the data error rate low at 5%.

6. Claims 10, 20, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Suzuki and Todd (US 6,002,672).

For claims 10, 20, 30, Wright teaches the procedures 108, 114, the code, to select antenna, & the selecting said portion of said dwelled-on at least one of a plurality of antennas, in claim 1, but fails to teach the selecting an starting antenna.

Suzuki teaches the selecting of a starting antenna to dwell based on the previously determined sequential order, in clam 2, & using the same reason to combine Suzuki with Wright.

Wright & Suzuki fail to teach the antenna selection based on meeting a specified range of values for at least one of said plurality of signal quality metrics.

Todd teaches these features [the antenna selection is to meet the BER threshold thr20 having a BER range greater than 0% and less than, equal to 8%, col. 7, lines 27-28, step 440 in Fig. 4b, col. 6, line 52 to col. 7, line 32 & col. 8, lines 4-46], for controlling the quality metrics BER in a low error range. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Wright, Suzuki with Todd's BER quality metrics, in order to provide tolerable BER range for the antenna selection.

(10) Response to Argument

A> Regarding argument in section **I.A., Wright does not anticipate claims 1, 11, and 21** [pages 9-11], with the "selecting for signal processing a portion of said dwelled-on at least one of a plurality of antennas **based on said determined gain and said determined at least one of a plurality of signal quality metrics** from said dwelled-on at least one of a plurality of antennas", as recited in independent claim 1,

Wright does teaches the above claimed limitations for the antenna selection as shown in function control of the Fig. 7, step 170, signal quality indicator SQI = Good ?, to verifying signal quality metric. If the SQI is not good, then control goes to step 178 to enable gain control algorithm, of Fig. 9, & then, enables the antenna diversity algorithm, of Fig. 8, in step 180, to select antenna-1 at step 206, 213 or select antenna-2 at steps 207, 212 [the description of Fig. 6/Fig. 7, in col. 6, line 62 to col. 7, line 44 & the description of Fig. 8/Fig. 9 in col. 7, line 34 to col. 8, line 63].

In the third paragraph of page 3 [applicant's Pre-Appeal Brief, filed on April 18, 2007], applicant also admitted that Wright discloses if the SQI is POOR as determined at 170, both the antenna diversity procedure and the gain control procedure are enabled at 178 and 180, respectively, for the limitation, the antenna selection **based on said determined gain and said determined at least one of a plurality of signal quality metrics.**

Regarding the argument that the gain information within the base station receiver structure disclosed by Wright in Fig. 3 is relevant only with regard to switch 18, i.e., only after an antenna has been selected by switch 14 [last paragraph in page 10 of the Appeal Brief],

Wright teaches, in Fig. 4, the antenna selection at step 108 [Fig. 4] before executing the gain control procedure 110, and then setting switch 14 at step 114. Therefore, Wright teaches the performing of the gain control procedure 110 before step 114 to set switch 14 to select the antenna.

B> Regarding argument in section **I.B.,** the requesting that the rejection of claims 9, 19, and 29 be withdrawn, due to the dependency upon independent claims 1, 11, and 21,

Since independent claims 1, 11, 21 are still standing as rejected for the reason shown in A above, therefore, claims 9, 19, 29 are still rejected.

C> Regarding argument in section **II.A.i,** for the Rejection of Claims 2, 4, 6, 12, 14, 16, 22, 24, the Combination of Wright and Suzuki Does Not Disclose or Suggest Selecting a Starting Antenna,

Applicant concluded that the combination of Wright and Suzuki teaches only that the antenna may be "randomly selected based on data generated at random" but does not teach the starting antenna is selected by random selection [the first paragraph after heading on page 15 of the Appeal Brief, dated 6/18/2007 & Suzuki's col. 9, lines 21-26].

However, Suzuki further teaches the antenna selection is based on the determined sequential order [column 9, lines 21-26; also concluded by Applicant in the second paragraph before last paragraph on page 14 of the Appeal Brief, dated 6/18/2007]. Since a sequence is inherently having a starting point, therefore, Suzuki's determined sequential order for the antenna selection having a starting point, for the starting antenna.

D> Regarding argument in section **II.A.ii,** the Combination of Wright and Suzuki Does Not Disclose or Suggest Selecting a starting Antenna Based on Random Selection,

Applicant concluded that the combination of Wright and Suzuki teaches only that the antenna may be "randomly selected based on data generated at random" but does not teach the starting antenna is selected by random selection [the first paragraph after heading on page 15 of the Appeal Brief, dated 6/18/2007 & Suzuki's col. 9, lines 21-26].

However, Suzuki further teaches the antenna selection is based on the determined sequential order [column 9, lines 21-26; also concluded by Applicant in the second paragraph before last paragraph on page 14 of the Appeal Brief, dated 6/18/2007]. Since a sequence is inherently having a starting point, therefore, Suzuki's determined sequential order for the antenna selection having a starting point, for the starting antenna.

Further more, Since Suzuki also teaches the antenna can be selected randomly [col. 9, lines 21-26]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to understand that the starting antenna can be selected randomly based on the teachings from Suzuki.

E> Regarding argument in section **II.A.iii,** the Combination of Wright and Suzuki Does Not Disclose or Suggest Determining a Starting Gain for said Starting Antenna using an Automatic Gain Control,

Wright teaches the gain control procedure [steps in Fig. 9/Fig. 3 & its related description in the specification].

Suzuki further teaches the antenna selection is based on the determined sequential order [column 9, lines 21-26; also concluded by Applicant in the second paragraph before last paragraph on page 14 of the Appeal Brief, dated 6/18/2007]. Since a sequence is

inherently having a starting point, therefore, Suzuki's determined sequential order for the antenna selection having a starting point, for the starting antenna. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to understand that the starting gain for a starting antenna is determined by using an Automatic Gain Control, from the teachings of Wright and Suzuki.

F> Regarding argument in section **Bi,** the Combination of Wright, Suzuki and Lyons Does Not Disclose or Suggest Selecting said Starting Antenna Based on a Predetermined Criteria.

Wright does teach the antenna selection based on the predetermined criteria, SQI=Good in step 170 of the control function in step 107 of Fig. 4 before set antenna selection switch 14 in step 114 of Fig. 4. Suzuki teaches the starting antenna must be selected in the determined sequential order, as shown above. Therefore, for one of the ordinary skill in the art, it is understandable that Wright, Suzuki does teach the Selecting said Starting Antenna Based on a Predetermined Criteria.

G> Regarding argument in section **Bii,** the Combination of Wright, Suzuki and Lyons Does Not Disclose or Suggest an Antenna Dwelling Order Based on a Predetermined Criteria.

Suzuki teaches the starting antenna must be selected in the determined sequential order, as shown in C above, therefore, for one of the ordinary skill in the art, it is understandable that the Antenna Dwelling Order Based on a Predetermined Criteria, from the sequential order determination of Suzuki.

H> Regarding argument in section **C,** the Combination of Wright, Suzuki and Balanchandran Does Not Disclose or Suggest Selecting said Starting Antenna Based on a Prior History.

Suzuki teaches the antenna selection is based on the determined sequential order [column 9, lines 21-26; also concluded by Applicant in the second paragraph before last paragraph on page 14 of the Appeal Brief, dated 6/18/2007]. Since a sequence is inherently having a starting point, therefore, Suzuki's determined sequential order for the antenna selection having a starting point, for the starting antenna, and

Balanchandran teaches the antenna selection based on the steps of determining a threshold value and a hysteresis value, as the prior history [column 3, lines 10-36]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to understand that the selection of the starting antenna could be based on the prior history, based on the teachings from Suzuki & Balanchandran.

I> Regarding argument in section **D,** the Combination of Wright, Suzuki and Todd Does Not Disclose or Suggest the antenna selection based on meeting a specified range of value.

Since Wight and Suzuki teach the features in claims 1, 11, 21, as shown in A above, & Todd teaches the antenna selection based on meeting a specified range of values, col. 7, lines 27-28, step 440 in Fig. 4b, col. 6, line 52 to col. 7, line 32 & col. 8, lines 4-46]. Therefore, for one of the ordinary skill in the art, it is understandable that Wright, Suzuki and Todd teach the antenna selection based on meeting a specified range of value.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Charles Chow

Examiner

Art Unit: 2618
August 6, 2007.

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